

**WHAT IS CLAIMED:**

1. An isolated *Bacillus* beta subunit of a DNA polymerase III-type enzyme, the isolated beta subunit:
  - (i) comprising the amino acid sequence of SEQ ID NO: 174; or
  - (ii) being encoded by a nucleic acid molecule hybridizing to the complement of SEQ ID NO: 173 under hybridization conditions comprising at most about 0.9M sodium citrate buffer at a temperature of at least about 37°C.
2. The isolated *Bacillus* beta subunit according to claim 1 wherein the *Bacillus* species is *Bacillus stearothermophilus*.
3. The isolated *Bacillus* beta subunit according to claim 1 wherein the beta subunit comprises the amino acid sequence of SEQ ID NO: 174.
4. The isolated *Bacillus* beta subunit according to claim 1 wherein the beta subunit is encoded by a nucleic acid molecule that hybridizes to the complement of SEQ ID NO: 173 under hybridization conditions comprising at most about 0.9M sodium citrate buffer at a temperature of at least about 37°C.
5. The isolated *Bacillus* beta subunit according to claim 1 wherein the beta subunit is purified.
6. A beta clamp comprising the *Bacillus* beta subunit according to claim 1.
7. A DNA polymerase III-type enzyme complex comprising the beta clamp according to claim 6.
8. A kit comprising:
  - a container that contains therein either a deoxynucleoside triphosphate or a dideoxynucleoside triphosphate; and
  - a container that contains therein the DNA polymerase III-type enzyme complex according to claim 7.